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**OHIO ENVIRONMENTAL PROTECTION AGENCY (Ohio EPA)
DIVISION OF EMERGENCY & REMEDIAL RESPONSE (DERR)**

SITE TEAM EVALUATION PRIORITIZATION (STEP) WORKPLAN APPROVAL FORM

SOUTH DAYTON DUMP AND LANDFILL

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Date

**UPON REVIEW AND APPROVAL OF THIS STEP WORKPLAN, PLEASE SIGN AND
FAX THIS SHEET TO (513) 285-6249, ATTENTION: IRENE VASILKOV**

OHIO ENVIRONMENTAL PROTECTION AGENCY (Ohio EPA)**DIVISION OF EMERGENCY & REMEDIAL RESPONSE (DERR)****SITE TEAM EVALUATION PRIORITIZATION (STEP) WORKPLAN**

STATEMENT OF PURPOSE: A STEP is a prioritization effort for CERCLIS sites that have a completed Focused Site Inspection Prioritization (FSIP) and still require additional work before a Hazard Ranking Scoring (HRS) Package can be prepared. The purpose of this STEP is to collect data necessary to prepare an HRS scoring package to sufficiently evaluate if the South Dayton Dump and Landfill site belongs on the National Priority List (NPL). The data will be used to document observed releases, observed contamination, and target exposures to contamination.

I. GENERAL INFORMATION

Date of Workplan: January 16, 1996

Expected Date of Sampling: March, 1996

Site Name: South Dayton Dump and Landfill (a.k.a. South Dayton Landfill or Moraine Recycling)

County: Montgomery

CERCLIS NO.: OHD980611388 Ohio ID: 557-0752

Site Location: 1975 Dryden Road (Springboro Pike), Moraine, Ohio

Latitude: 39° 43' 34" Longitude: 84° 13' 17"

Ohio EPA Site Investigator: Wendy Vorwerk, DERR/SIFU

Ohio EPA Southwest District Site Investigator: Kurt Kollar

U.S.G.S. Map Info (Quadrant): Dayton South, Ohio

Map(s) Attached: Yes

Ohio Priority: High (based on 1995 Ohio EPA Master Sites List)

Access Permitted: Yes

Utility Clearance: Underground Utilities will be contacted 48 hours prior to visit.

Sample Summary

Total number of soil sample locations: Eleven samples, two background, and two duplicate

Total number of sediment sample locations: Four samples, one upstream, and one duplicate

Total number of surface water sample locations: Four samples, one upstream, and one duplicate

Total number of monitoring well sample locations: Four (three site samples and one upgradient background sample). These will be used to confirm previous sample results.

Directions to Site from Ohio EPA Southwest District Office

To reach the South Dayton Dump and Landfill from Ohio EPA Southwest District Office, take Interstate 75 south to the Dryden Road exit. Stay to the left on the exit ramp and turn left (north) on Dryden Road. Continue on this road for about 0.5 mile until the traffic light at East River Road. Proceeding through this intersection, drive slowly and, on the left (west), watch for the buildings marked Doyle R. James Plumbing and Heating and G & R Welding Service, approximately 0.25 mile from the intersection of Dryden Road and East River Road. The entrance to the site is an unpaved road located between these buildings and is marked by a locked entrance gate.

II. SITE DESCRIPTION

The South Dayton Dump and Landfill (SDD), located at 1975 Dryden Road in primarily an industrial part of Moraine, Ohio (Figure 1), is an active dump that presently accepts construction and demolition debris. The property occupied by the SDD is owned by the estate of Cyril Grillot and Kathryn Boesch. The SDD site occupies about 30 acres of a 40-acre parcel of land. Of the northern 10 acres of the 40-acre parcel, 8 acres was leased to the former auto salvage yard until 1994 and is now vacant except for an asphalt pile, and about 2 acres is leased to a small fabricating company (PRC Environmental Management, Inc. [PRC], 1995).

The nearest residences to the SDD site are located in a trailer park about 0.25 mile southeast of the site. The SDD is bordered on the north by a former auto salvage yard, an asphalt plant and asphalt storage pile, and light industrial facilities; on the east by Dryden Road and light industrial facilities; on the south by a pallet manufacturing and repair company and a gravel pit filled with water; and on the west by a flat, grassy area with a bicycle trail and through which runs the Great Miami River (GMR). A tree-lined, manmade levee constructed of fill material separates the site from this grassy area. The grassy area between the site and the GMR is approximately 350 feet wide and is in the 100-year flood plain; the flood plain is owned by the Miami Conservancy District. A small wetland is also documented to exist on the site (Ecology and Environment, Inc. [E&E], 1991; PRC, 1995). Figure 2 depicts the layout of the site.

The topography of the site is fairly level except for a depression toward the west end of the dump and a dry ravine along the southeast border. In addition, the topography gently slopes downward from

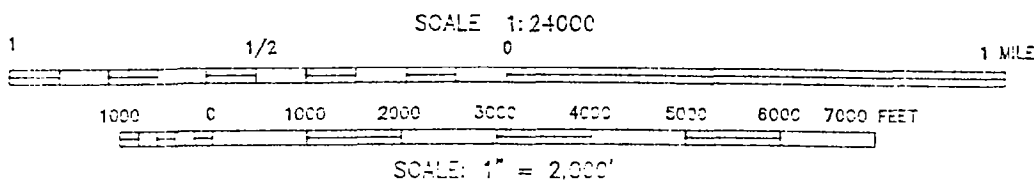
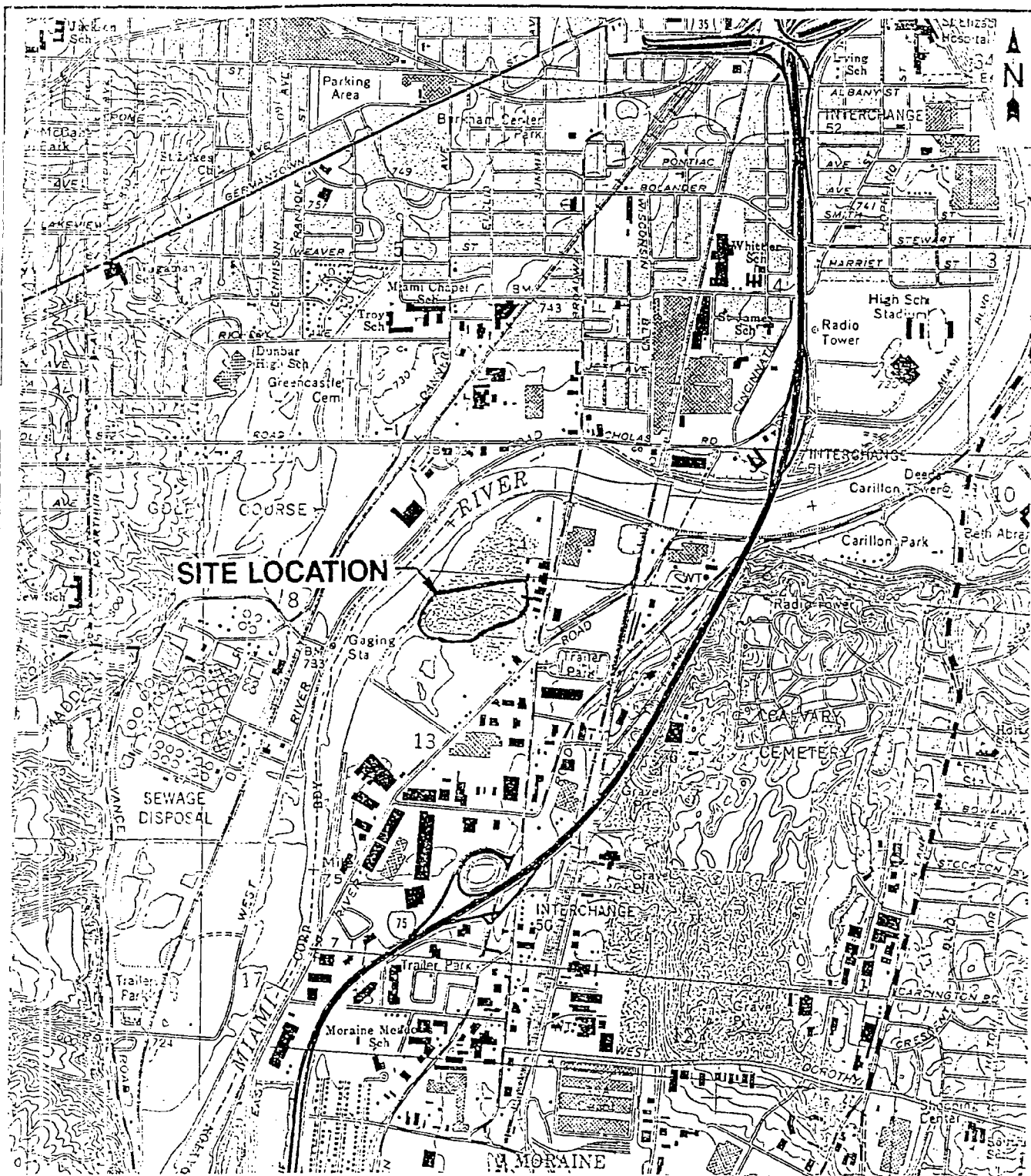
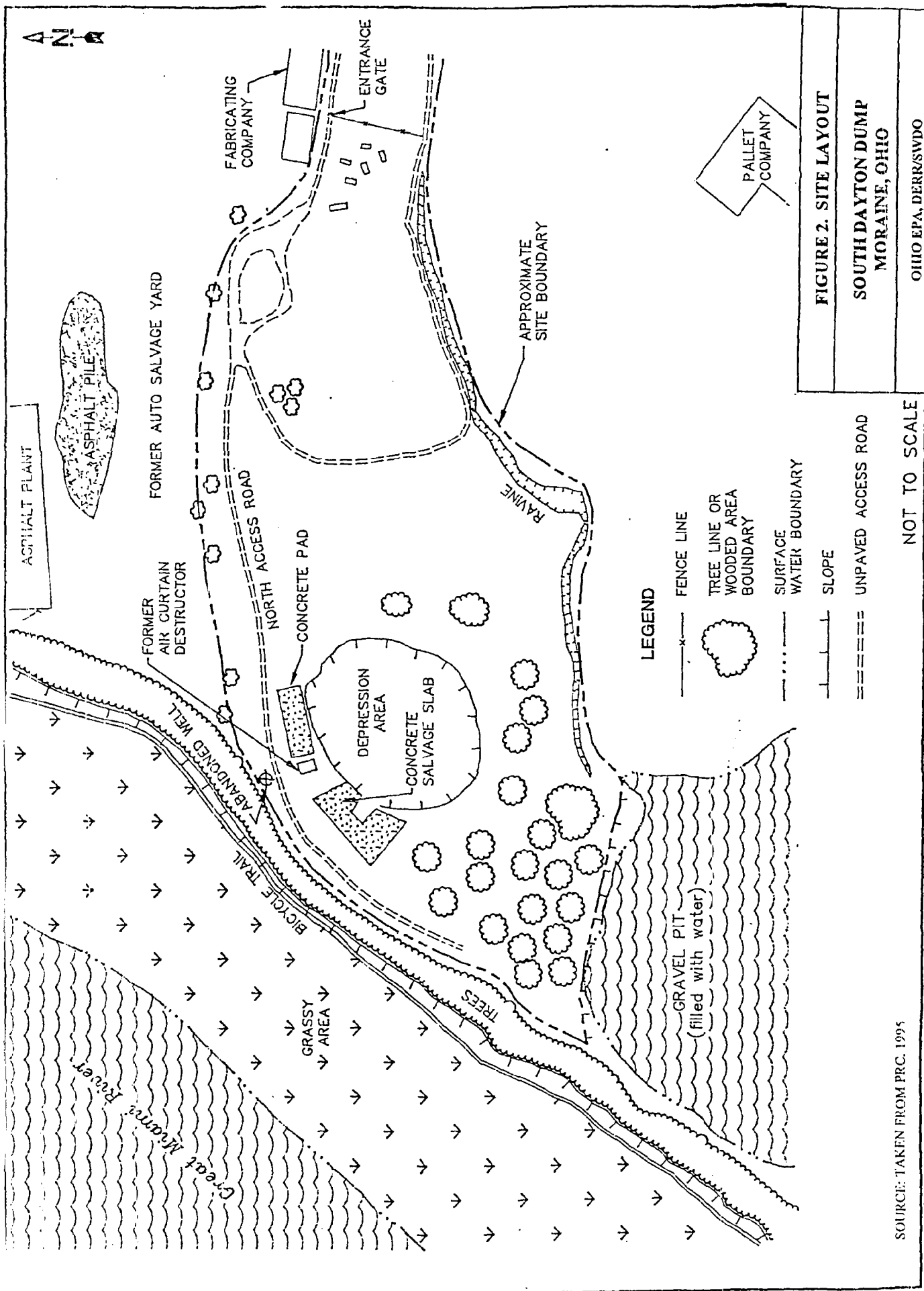


FIGURE 1. SITE LOCATION MAP

SOUTH DAYTON DUMP
MORaine, OHIO

OHIO EPA, DERR/SWDO

SOURCE: TAKEN FROM PRC, 1995



the boundary of the site toward the grassy area on the west and the gravel pit on the south (PRC, 1995).

Several trailers, most of which appear to be abandoned, are located west of the entrance gate to the site. An unpaved access road extends along the site's north boundary and curves around to the southwest portion of the site. Stacks of wooden pallets, piles of concrete, discarded 55-gallon drums, wood and metal debris, and mounds of fly ash have been observed along this access road. An abandoned air curtain destructor is also situated along the northern access road in the northwest corner of the site, and there is a 35- by 100-foot concrete pad located just east of the air curtain destructor. E&E, during a screening site inspection (SSI) conducted in 1991, obtained an organic vapor analyzer (OVA) reading that deviated from background near the opening of the air curtain destructor. The depression mentioned earlier is located directly south of the air curtain destructor; it has an approximately seven-foot drop around its perimeter (E&E, 1991; PRC, 1995). Standing water has been observed in this depression area during various site visits by U.S EPA and Ohio EPA personnel. On an Ohio EPA site visit in August of 1995, which occurred after a lengthy period of rain, this depression area appeared to be completely filled with water.

Another dirt road extends south from the north access road across the center of the site before turning to the east and extending along the ravine back to the area of the site entrance. A large, open, shallow depression separates the large depression in the western portion of the site from the center dirt road to the east. According to E&E, it appeared that this shallow depression was once a gravel pit converted for landfill use but was not being used at the time of the SSI. E&E observed several mounds of soil and ash east of the center dirt road (E&E, 1991).

During a site reconnaissance performed by PRC in December of 1994, the central portion of the site appeared to be the only area of active dumping. As observed during an Ohio EPA site visit on March 17, 1995, the locked entrance gate restricts site access at this location; however, a portion of the site is not fenced. In addition, graffiti found on heavy machinery at the site suggests that trespassing does occur, although Alcine Grillot, the operator of the SDD since 1950, stated that the trespassing was an isolated incident.

III. SITE HISTORY

The SDD began accepting wastes in 1941 and operated as a licensed sanitary landfill until 1986. Before 1970, the primary disposal practice at the site was the open burning of materials, mostly vegetation and wood wastes. Landfilling was a secondary disposal practice. Between 1950 and 1970, drummed wastes were occasionally accepted at the site; the drums were emptied of their contents and either buried or sold to drum recyclers. Because records of these activities were not kept, details regarding where the drum contents were disposed, the types and quantities of drummed wastes accepted, and the frequency of dumping are not available (E&E, 1991; PRC, 1995).

During the Ohio EPA site visit in August of 1995, Alcine Grillot claimed that only a few drums were disposed at the SDD over the years. Montgomery County Health District photographs taken in 1969 and 1970, however, depict drums and burning drums. Furthermore, inspections of the SDD conducted by Ohio EPA in 1985 as part of a preliminary assessment (PA) of the site found many

drums and barrels of chemicals. And, in addition to E&E observing drums during its 1991 SSI, PRC during its site reconnaissance in 1994 noted evidence of several drums, some of which were empty and some that still held their nonliquid contents (PRC, 1995). Ohio EPA personnel also observed drums scattered throughout the site during their site visits in March and August of 1995.

Because of legislation prohibiting open burning, this practice ceased at the SDD site in 1970. At this time, Alcine Grillet formed Moraine Recycling, Inc. (MRI), which operated on the site. MRI developed and constructed a furnace-like device, called an "air curtain destructor," to burn vegetation and wood wastes. According to the Montgomery County Combined General Health District (MCCGHD), this device was not an incinerator but rather a "controlled open burning device," and it was to be operated under a special open burning permit. The Montgomery County Health Department (MCHD) acknowledged MRI's permit application for the air curtain destructor and recommended starting up the device as soon as possible for experimental shakedown. During this period, operation of the device was covered by open burning permits. After the permit applications were submitted, several trial burns of the device were initiated. Because the Ohio Department of Health never granted final approval of the permit, however, the project was abandoned (E&E, 1991; PRC, 1995).

From June 4, 1973, to July 5, 1976, two Hobart Corporation plants in Dayton sent waste to the site. During this time period, Hobart generated, combined, and shipped about 825 gallons of waste per month. This waste was combined in single 55-gallon drums and consisted of the following: 1,1,1-trichloroethane and cutting oil from degreasing; paint waste with 2-butanone and xylene; Stoddard solvent and cutting oil from degreasing; and machine tool water-based synthetic coolants contaminated with cutting oils and solvents (Ohio EPA, 1984). Approximately 15 drums per month may have been disposed at the SDD. In May of 1978, MCCGHD and Ohio EPA inspected the SDD site and noted several problems, including the presence of containers labeled "hazardous," unsatisfactory on-site compaction and filling, and a lack of at least two feet of cover soil that would support vegetation (Ohio EPA, 1985).

A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Notification of Hazardous Waste Site Form submitted by Industrial Waste Disposal Company, Inc. (IWD) provides further evidence that hazardous wastes were disposed at the SDD site. Submitted on June 9, 1981, this notification indicates that the site had been used as a disposal facility for the industrial and municipal wastes of IWD's customers; however, it does not include information concerning quantities of wastes, specific types of wastes, or dates of disposal (E&E, 1991; PRC, 1995).

The SDD site currently operates under a solid waste disposal permit issued by MCHD, which allows disposal of solid, inert, insoluble materials, such as unregulated foundry sand, slag, glass, and demolition debris. No liner apparently exists at the site. According to Alcine Grillet, the operator of the site, the SDD's only customer is the General Motors Corporation Delco-Moraine Plant (GMC), which is located about 0.5 mile northeast of the site. The GMC wastes disposed at the site primarily include wooden pallets, concrete, and scrap wood (E&E, 1991; PRC, 1995).

PREVIOUS INVESTIGATIONS

The 1985 PA of the SDD conducted by Ohio EPA concluded that the presence of hazardous chemicals that had been documented at the site poses a threat to ground water because the sand and gravel aquifer underlying the site provides easy access for contaminants to leach into the aquifer. The PA also concluded that the Great Miami River also has a chance of being polluted because the ground-water flow is to the west, toward the river. Ohio EPA rated the SDD as a high priority site for both state and federal action. Because witnesses observed chemical and hazardous wastes being deposited in the landfill, Ohio EPA recommended a U.S. EPA Field Investigation Team (FIT) investigation consisting of the installation of monitoring wells (Ohio EPA, 1985).

During their SSI of the SDD conducted in 1991, E&E collected 10 surface and subsurface soil samples and had them analyzed for TCL compounds and TAL analytes. These samples were taken from various locations throughout the SDD site, including near the air curtain destructor and piles of soil, ash, and wood and concrete debris; next to a 55-gallon drum; and in the two large depression areas. Analysis of these samples showed volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and metals at concentrations significantly above background levels. Several polynuclear aromatic hydrocarbons (PAHs) also were detected in some of the soil samples; in addition to past disposal practices at the site, the presence of PAHs can be attributed to the nearby asphalt plant and pile (E&E, 1991).

PRC performed a Focused Site Inspection Prioritization (FSIP) on the SDD in December of 1994. They reviewed available information, conducted a site reconnaissance, and prepared a preliminary Hazard Ranking System (HRS) score for the site. Based on their findings, they determined the site does not present a substantial threat to human health and the environment that requires immediate removal action. They did recommend that an expanded site inspection (ESI) be conducted at the SDD site and include the installation and sampling of ground-water monitoring wells and the sampling of surface water (PRC, 1995).

IV. SITE GEOLOGY AND HYDROGEOLOGY

The SDD site is located in the Till Plains section of the Central Lowlands physiographic province. With an elevation of about 730 feet above sea level, the topography of the site is fairly level, except for a depression toward the west end of the dump and a dry ravine along the southeast border. In addition, the topography gently slopes downward from the boundary of the site toward the grassy area on the west and the gravel pit on the south. According to the Soil Survey of Montgomery County, the site occupies an area designated as "gravel pit," defined as open excavations from which sand and gravel have been removed and the upper soil layers have been stripped away (Soil and Conservation Service, 1976).

The SDD site, which is located in a secondary designated wellhead protection area, is underlain by unconsolidated glacial outwash deposits of the Great Miami Aquifer (GMA). The GMA is the only production aquifer in Montgomery County; it has a high yield with a capacity of several thousand gallons per minute and almost all the water consumed in the county comes from this aquifer. The unconsolidated glacial deposits consist of 25 to 250 feet of poorly sorted clay, silt, sand, and gravel,

which overlie Ordovician-aged interbedded shales and limestones of the Richmond Group. The bedrock occurs at depths of about 180 to 240 feet below the ground surface. The shales and limestones in the bedrock are relatively impermeable in comparison to the sand and gravel aquifers and, thus, the bedrock units are not considered important sources of ground water (Ohio EPA, 1990; Geraughty & Miller, Inc. [G&M], 1991; PRC, 1995).

According to the Ground Water Resources Map of Montgomery County, the SDD site lies in an area where permeable sand and gravel deposits beneath the floodplain of the Great Miami River may yield 500 to 1000, or more, gallons per minute (gpm) of ground water. Wells constructed in these deposits yield in excess of 1000 gpm at depths ranging from 85 feet to as much as 185 feet (Ohio Department of Natural Resources, 1986).

In most places around the Dayton area, the unconsolidated glacial outwash deposits of the GMA are separated into an upper and lower aquifer by locally discontinuous silt and clay units, or till zones. The upper aquifer is generally 30 to 70 feet thick, contains minor, shallow till lenses, and is under water-table conditions. Locally, recharge from the upper aquifer to the lower aquifer can be relatively rapid where the till layer is absent, but regionally, the till layer provides an effective barrier that results in the lower aquifer being semi-confined. The till zone overlies up to 150 feet of sand and gravel that comprise the lower aquifer, which is a fully saturated semi-confined aquifer throughout most of the Dayton area. Locations exist, however, where the till is thin and discontinuous. In areas where the till is absent, the upper and lower aquifers respond as one hydrogeologic unit. The lower aquifer is underlain by a basal till or the Ordovician-aged bedrock deposits (Ohio EPA, 1990; G&M, 1991).

Well logs for wells within 0.5 mile of the SDD indicate the subsurface geology near the site is highly variable, even within short distances, and consist of gravel and sand and gravel with layers of till that occur in varying thicknesses and at greatly different depths. In Dayton Power and Light (DP&L) wells, located east across Dryden Road from the site, glacial till layers were encountered at depths ranging from a few feet below ground surface (bgs) to 78 feet to 168 feet bgs. The thicknesses of these till layers varied from 2 feet to 32 feet, and some of the wells contained up to five separate layers of till. In 4 wells located south and southeast of the site, till was present at the ground surface down to depths ranging from 4 feet to 15 feet bgs. In 3 of these wells, the till layers were followed by gravel deposits down to depths of as much as 130 feet bgs. The fourth well contained gravel interspersed with deposits of clay and sand. Two wells directly south of the SDD site had sand and gravel deposits with till layers ranging from 23 feet to 42 feet thick at depths of 15 feet bgs and 22 feet bgs, respectively. One of these wells contained another till layer, 9 feet thick, at a depth of 48 feet bgs.

The static water levels in the wells described above range from 19 feet to 70 feet bgs; however, these wells were drilled between 1954 and 1980. Information about recent ground-water elevations in the area of the site is unavailable, but it is believed that reduced ground-water pumping in the area has been responsible for an increase in the ground-water elevation over the years. It is likely that natural recharge from precipitation has also caused an increase in the elevation of the water table. Seasonal variations exist in the recharge to the ground-water supplies of the Dayton area; this recharge occurs principally between late fall and early spring (MVRPC, 1982; PRC, 1995).

The direction of ground-water flow in the area of the site is believed to be influenced by topography and the Great Miami River, as ground water in the region generally flows southwest toward the river (Spieker, 1968; MVRPC, 1982; PRC, 1995). In the area of the site, the direction of ground-water flow is likely to the west, toward the Great Miami River. Because the river may act as a recharge and discharge zone in the site area, ground-water flow may also be influenced by the river's southerly flow, which may cause the ground-water flow direction to be more to the west-southwest. Additionally, based on the observations of PRC during their 1994 site reconnaissance, ground-water may be discharging to the water-filled gravel pit that is located immediately southwest of the site (PRC, 1995).

Few measurements of hydraulic parameters exist for the upper aquifer unit of the GMA; the upper aquifer saturated thickness is typically less than 30 feet and is rarely used as a ground-water supply. G&M performed aquifer tests on the upper aquifer near the Harrison Radiator site, which is about two miles south of the SDD site, and obtained values for hydraulic conductivity in the range of 1504 to 2008 feet/day. Hydraulic conductivity tests performed on the lower aquifer in the area of the SDD had results ranging from 214 to 436 feet/day (G&M, 1990, 1993).

The vertical hydraulic conductivity of the till zone in the Dayton area has been estimated from both field and laboratory tests. G&M reported vertical hydraulic conductivity estimates for the till zone at Harrison Radiator ranging between 0.012 and 3.31 feet/day, with a median value of 0.02 feet/day. An aquifer pumping test at the Dryden North wellfield, which is approximately three miles southwest of the SDD site, yielded a vertical hydraulic conductivity estimate of 0.055 feet/day (G&M, 1990, 1993).

The primary water supplier in Montgomery County is the city of Dayton. The city maintains two wellfields with a total of 100 production wells; the wellfields are located over 5 miles from the SDD site. These wells pump an average of 82 million gallons per day (gpd) of water to supply about 420,000 people. The city of Moraine receives its water from Montgomery County, which receives its water from the city of Dayton (PRC, 1995).

Two communities within four miles of the DLLF site currently use ground water from the GMA. The city of Oakwood maintains two wellfields, located just over two miles northwest of the site. The city of West Carrollton's wellfield, located just over four miles southwest of the site, supplies a population of about 15,000 people (PRC, 1995).

Additional wellfields are located within four miles of the site. Montgomery County has four wellfields located about three miles south, southeast, and southwest of the site. Two of the wellfields, Lamme Road and Dryden Road North, are located 2.5 miles south-southeast and about 3 miles south-southwest of the site, respectively, and the other two, Dryden Road South and Miami Shores, are located about 3 miles south-southwest of the site. The two Dryden Road wellfields and the Miami Shores wellfield are currently maintained as standby wellfields. The Lamme Road wellfield is in the process of being abandoned, and although both Dryden Road wellfields are maintained as standby wellfields, both have shown contamination and their future is uncertain. The Lamme Road and Miami Shores wellfields were last used in 1989 (Ohio EPA, 1995a).

Although most water supplies within 4 miles of the site are provided by public sources, 1990 census data indicate that about 560 people receive water from private residential wells within 4 miles of the site. The nearest private well is located within 0.25 mile of the site. The most recent data from the Montgomery County Division of Environmental Health files, however, indicate that there are no private, residential wells within one mile downgradient of the site (Ohio EPA, 1995b). Many area companies reportedly use ground water for various industrial purposes (PRC, 1995).

According to the available well logs, area wells are screened primarily in the sand and gravel aquifer. Therefore, the total population within 4 miles of the SDD estimated to be routinely subject to potential contamination from the site is about 25,060.

V. FIELD WORK SUMMARY

The STEP investigation of this site will occur in two phases. Phase 1 will be conducted to determine the location of any contaminant plume(s) emanating from the landfill and to measure the quality of the ground water at the site. This phase will consist of ground-water screening from exploratory borings drilled at the site and of the installation of monitoring wells. Phase 2 of the investigation will consist of the sampling of ground water from these wells, as well as the sampling of surface water, sediment, and surface and subsurface soil.

GROUND-WATER SCREENING

PSARA Technologies, Inc. (PSARA), the Level-of-Effort (LOE) contractor for this investigation, will advance six exploratory soil borings at the site and collect in situ ground-water samples from these borings. Three samples will be obtained from each boring and analyzed for VOCs in order to provide preliminary vertical contaminant profiles at each location. The ground-water samples will be analyzed by Ohio EPA's Division of Environmental Services laboratory. For details on the ground-water screening phase of the investigation, see PSARA's workplan in Appendix A.

MONITORING WELL INSTALLATION

Four ground-water monitoring wells will be installed at the site by PSARA Technologies, Inc. (PSARA), the Level-of-Effort (LOE) contractor for this investigation. The wells will be located based on the review of aerial photographs, historical information in existing reports, and the results of test borings that PSARA will drill at the site. Three downgradient wells and one upgradient (background) well will be installed at locations that will allow the measurement of ground-water quality upgradient from the landfill and at the center of contaminant plumes emanating from the landfill. For details on the installation of the monitoring wells, see Appendix A.

SAMPLING

Waste management and soil contamination will be investigated by collecting a maximum of 25 samples from 4 matrices on and around the SDD site (see Figure 3, Sampling Locations). This number does not include duplicate samples, background samples, and trip blanks. The samples will be submitted to a Contract Laboratory Program (CLP) laboratory and analyzed for the Target Compound List (TCL), which includes volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and pesticides/PCBs, and for the Target Analyte List (TAL). Background sampling locations will be determined in the field. Sampling locations will be recorded.

Personal protective procedures, sample collection, sample screening, and field decontamination will be performed according to Ohio EPA/DERR's "Field Standard Operating Procedures," 3rd Edition, 1991 and the Quality Assurance Project Plan (QAPP) for superfund site investigation activities.

Soil

Waste management and soil contamination will be investigated by collecting a maximum of 11 soil samples. Both surface (less than two feet in depth) and subsurface (greater than two feet in depth) soil samples will be obtained and submitted for analysis. The subsurface soil samples will be collected from soil borings advanced at the site during the selection of locations for monitoring wells that will be installed as part of the STEP investigation. In addition, two background soil samples will be collected and analyzed; their locations will be determined in the field. Figure 3 depicts the approximate soil sample locations, and Table 1 summarizes the soil sampling parameters and requirements.

Sediment

A total of five sediment samples will be collected at the SDD. Two samples will be collected from the water-filled gravel pit that is present at the site. Three sediment samples will be obtained from the Great Miami River, which is approximately 350 feet west of the site, at the following locations: (1) immediately north of the site boundary, in an upstream location; (2) in a part of the river west of the site, within the site boundaries; and (3) immediately south of the site boundary, in a downstream location. See Figure 3 for the approximate sediment sample locations and Table 2 for the sediment sampling parameters and requirements.

Surface Water

A total of five surface water samples will be collected at the SDD. Two samples will be obtained from the water-filled gravel pit at the site. Three surface water samples will be collected from the Great Miami River at the following locations: (1) immediately north of the site boundary, in an upstream location; (2) in a part of the river west of the site, within the site boundaries; and (3) immediately south of the site boundary, in a downstream location. See Figure 3 for the approximate locations of the surface water samples and Table 3 for the surface water sampling parameters and